

## R768-Type OC-768/STM-256 Lightweight Receiver

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The R768 Receiver is manufactured in a 16-pin, pigtailed surface-mount metal package with a single-ended V-connector.

### Features

- High data rate capability, 40 Gbits/s
- PIN photodetector
- Fully operational through the L-band (1.6  $\mu\text{m}$ ) wavelength range
- Single-mode fiber pigtail with FC/PC optical connector
- Operating case temperature range: 0 °C to 65 °C
- Compact, butterfly package

### Applications

- Line terminal equipment
- High-speed networks up to 40 Gbits/s
- SONET OC-768 and SDH STM-256 telecommunications applications
- Extended-reach datacom and telecom applications
- Digital video

## Description

### Receiver Operation

The R768 40 Gbits/s fiber-optic receiver consists of a high-speed photodetector (PIN) and a wide-band linear preamp in a pigtailed surface-mount metal package with a single-ended V-connector. It is designed for use in single-mode, high-speed telecommunication applications at the SONET OC-768 and the ITU-T SDH STM-256 data rate of 42.5 Gbits/s.

The operating case temperature range for the receiver is 0 °C to 65 °C.

The receiver is manufactured in a compact, 16-pin surface-mount package with a single-mode optical fiber pigtail. The fiber pigtail is internally beveled for low return loss and is available with an FC-PC optical connector.

The received data is dc-coupled.

The receiver requires only a 6 V power supply for operation, plus an optional VADJUST from –1.0 V to +1.0 V (see pin descriptions). The photodiode requires a separate bias voltage: for the PIN, a nominal reverse bias of 4 V is required.

## Pin Information

**Table 1. Pin Descriptions**

Pin Number	Name
1	Not Used
2	GND
3	Alternate PIN Bias
4	GND
5	GND
6	GND
7	VADJUST (optional)
8	GND
9	GND
10	GND
11	GND
12	VCC
13	GND
14	PIN Bias
15	GND
16	NC

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operations section of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min	Max	Unit
Positive Supply Voltage	VCC	5.0	7.0	V
Photodiode Forward Current*	IPD	—	1	mA
Maximum Reverse Bias	VB	—	5	V
Optical Input Power, PIN	P <sub>MAX</sub>	—	8	dBm
Operating Case Temperature	T <sub>C</sub>	0	65	°C
Storage Temperature	T <sub>stg</sub>	−40	85	°C
Lead Soldering Temperature	—	—	250	°C
Lead Soldering Time	—	—	10	s

\* Device is normally reverse biased. Forward biasing the photodiode can compromise device performance and reliability.

## Optical Characteristics

**Table 2. Optical Characteristics** (T<sub>A</sub> = 25 °C)

Parameter	Symbol	Min	Typ	Max	Unit
Optical wavelength for Rated Sensitivity	$\lambda$	1.480	—	1.610	$\mu\text{m}$
Sensitivity, PIN	P <sub>LOW</sub>	—	−7	—	dBm
Maximum Optical Input Power, Average, PIN	P <sub>HIGH</sub>	—	3	—	dBm
Optical Return Loss	—	−27	−30	—	dBm
Responsivity of PIN, $\lambda = 1.55 \mu\text{m}$	$\mathfrak{R}_{\text{PIN}}$	—	0.7	—	A/W
Total Dark Current	I <sub>D</sub>	—	0.5	—	$\mu\text{A}$
Polarization-dependent Loss	PDL	—	—	0.5	dB

## Electrical Characteristics

**Table 3. Electrical Characteristics** (TA = 25 °C)

Parameter	Symbol	Min	Typ	Max	Unit
dc Power Supply Voltages:					
Positive Supply	VCC	5.5	6.0	6.5	V
PIN Bias	VPIN	3.5	4.0	4.5	V
Optional VADJUST	VADJ	-1.0	—	1.0	V
Positive dc Power Supply Current	ICC	—	80	150	mA
Power Dissipation	PDISS	—	—	0.975	W
Conversion Gain	—	—	60	—	V/W
Average Equivalent Input Noise Spectral Density	—	—	—	50	pA/√Hz
Low Frequency Cutoff (-3 dB)	fL	—	100	—	kHz
Bandwidth	BW	—	45	—	GHz
Rolloff (3 dB + 5 GHz)	—	—	-10	—	dB
Peaking	—	—	—	2	dB
Deviation from Linear Phase:	—				
100 kHz—25 GHz		—	10	—	deg
25 GHz—40 GHz		—	20	—	deg
40 GHz—50 GHz		—	40	—	deg
Output Return Loss:	S22				
100 kHz—20 GHz		—	—	-15	dB
25 GHz—40 GHz		—	—	-10	dB
40 GHz—50 GHz		—	—	-5	dB

Dimensions are in millimeters.



## Ordering Information

**Table 4. Ordering Information**

Description	Product Code	Photodiode	Connector	Comcode
R768-Type OC-768/STM-256 Lightwave Receiver	R768PGAA	PIN	FC	108894635
	R768PSAA	PIN	LC	108894643
	R768PDAA	PIN	SC	108727041
	R768PJAA	PIN	Test Ferrule	TBD

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